NG-PON2 Architecture Enabled by Heterogeneous Space Division Multiplexing with Distributed Light Source: A Proof-of-Concept Evaluation - DTU Orbit (08/11/2017)

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We have numerically evaluated the next generation passive optical network stage-2 (NG-PON2) architecture based on heterogeneous space division multiplexing (SDM) and wavelength-division multiplexing (WDM). Error free transmission (BER of 10−9) is obtained for all the downstream (DS) and upstream (US) data tributaries, each carrying 40 Gbit/s data, over 20-km of 19-core multi-core fiber (MCF) and 6-spatial-mode fewmode fiber (FMF) without using multiple-input multiple-output (MIMO) digital signal processing (DSP), respectively.

General information

State: Published
Organisations: Department of Photonics Engineering, High-Speed Optical Communication, Scuola Superiore Sant'Anna, CNIT
Authors: Asif, R. (Intern), Imran, M. (Ekstern), Ye, F. (Intern), Potí, L. (Ekstern), Morioka, T. (Intern)
Number of pages: 3
Pages: 181 - 183
Publication date: 2015

Host publication information

Title of host publication: Proceedings of 2015 International Conference on Photonics in Switching
Publisher: IEEE
ISBN (Print): 9781479988211
Main Research Area: Technical/natural sciences
Conference: 2015 International Conference on Photonics in Switching, Florence, Italy, 22/09/2015 - 22/09/2015
Communication, Networking and Broadcast Technologies, Components, Circuits, Devices and Systems, Computing and Processing, Engineered Materials, Dielectrics and Plasmas, Fields, Waves and Electromagnetics, Photonics and Electrooptics, Signal Processing and Analysis
DOIs:

10.1109/PS.2015.7328993

10.1109/PS.2015.7328993
Source: PublicationPreSubmission
Source-ID: 116743964
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015